

Editorial

# Powering the Future through Innovation in Battery Materials

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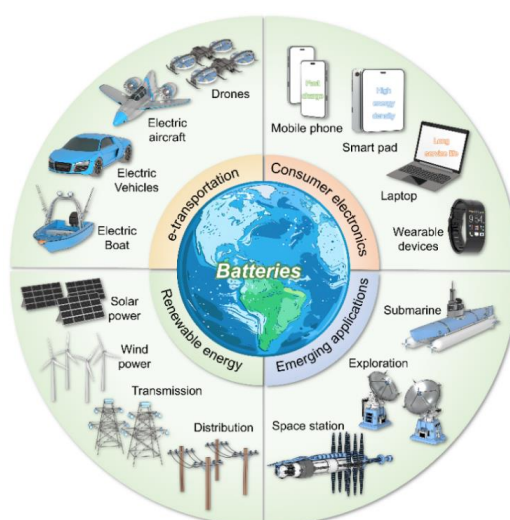
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Welcome to the inaugural issue of *Advanced Battery Materials*, a journal created to fulfill the urgent need to accelerate global progress in energy storage technologies. As we embark on this journey, our mission is clear: to serve as a reputable platform for groundbreaking research, which fosters interdisciplinary collaboration among scientists, engineers, and innovators dedicated to redefining the boundaries of battery materials and technologies.

## 1. The Imperative of Energy Storage

In recent years, the increasingly severe heatwaves witnessed globally have served as a stark reminder of the far-reaching impacts of climate change. The exacerbation of extreme heat conditions, with last year's summer surpassing that of the previous years in numerous regions across the world, has spotlighted the issue of greenhouse gas emissions as a primary driver behind the changing climate. It is thus evident that urgent attention must be directed towards addressing this critical concern. In this era characterized by climate change, renewable energy storage and conversion technologies are playing increasingly important roles in net-zero electricity generation and green transportation, which are the cornerstones of a sustainable future. From powering electric vehicles to stabilizing power grids reliant on renewable energy sources, advancements in battery materials are no longer merely scientific pursuits, but societal imperatives (Figure 1). Therefore, new materials and innovative technologies are urgently needed to optimize device efficiencies and accelerate the achievement of carbon neutrality. This journal is founded on the belief that transformative breakthroughs arise when materials scientists, chemists, physicists, and engineers converge to share insights, challenge paradigms, and pioneer technologies that push the boundary of what batteries can achieve.



**Figure 1.** Applications of rechargeable batteries in consumer electronics, e-transportation, renewable energy storage and emerging areas.



## 2. Scope and Vision

*Advanced Battery Materials* is committed to publishing high-quality, peer-reviewed research that spans the entire spectrum of battery innovation. The journal's scope encompasses both foundational discoveries and applied technologies, with a focus on:

- **Materials Innovation:** Novel electrode designs, electrolytes, separators, and sustainable processing techniques.
- **Advanced Characterizations:** Cutting-edge in situ and operando methods to unravel dynamic electrochemical processes.
- **Next-Generation Systems:** All-solid-state, multi-ion, organic, metal-air, hybrid, and beyond.
- **Sustainability:** Recycling strategies and lifecycle analysis to close the loop on battery materials.
- **Emerging Tools:** AI-driven diagnostics, machine learning models, and multiscale simulations to accelerate discovery.
- **Frontier Applications:** Flexible wearables, structural batteries, deep-space power systems, and seawater batteries to unlock new possibilities.

By embracing these themes, we aim to bridge the gap between laboratory innovation and real-world application, ensuring that scientific progress can be translated into tangible societal benefits.

## 3. A Platform for Collaboration

As a gold open-access journal, *Advanced Battery Materials* removes barriers to knowledge sharing, enabling researchers worldwide to access and share their latest findings. Our rigorous peer-review process guarantees the integrity and impact of published work. We particularly encourage interdisciplinary submissions that, for instance, integrate computational modeling with experimental validation or couple materials design with circular economy principles. It is time to share your breakthroughs, insights or visions regarding next-generation energy storage systems in this journal. We envision *Advanced Battery Materials* as not just a publication platform, but a catalyst for driving energy transition. Let us harness the power of collaboration to unlock the full potential of batteries—for our planet and for generations to come.

## Conflicts of Interest

The author declares no conflict of interest.